REMARKS

[0001] Claims 1-24, all the claims pending in the application, stand rejected on prior art grounds. Applicants respectfully traverse these rejections based on the following discussion.

I. The Prior Art Rejections

[0002] Claims 1-24 stand rejected under 35 U.S.C. §102(a) as being anticipated by Rizvi, et al. (Maintaining Data Privacy in Association Rule Mining," Proceedings of the 28th VLDB Conference, Hong Kong, China, August 2002, 12 pages), hereinafter referred to as Rizvi. Applicants respectfully traverse these rejections based on the following discussion.

[0003] Specifically, the Applicants submit that the cited prior art reference does not teach or suggest the following limitations of amended independent claim 1 or the similar features found in independent claims 7, 13 and 19: "creating randomized transactions from an original dataset" by performing the following: (1) "randomly selecting true items from each transaction in said original dataset"; (2) "randomly dropping some of said true items that were randomly selected"; and (3) "randomly replacing some of said true items that were randomly dropped with false items".

[0004] In rejecting claim 13, the Office Action provides that Rizvi discloses:

[0005] "In regards to claim 13, Rizvi teaches a computer-implemented method of mining association rules from datasets while maintaining privacy of individual transactions within said datasets through randomization (Rizvi; Abstract), said method comprising:

-creating randomized transactions from an original dataset (Rizvi; Section 2.3, paragraph 1, lines 1-3 - *"distort the user data before it is subject to the mining* process") by:

- randomly dropping true items from each transaction in said original dataset (Rizvi; Section 3.1, paragraphs 1 and 2), and
- randomly inserting false items into each transaction in said original dataset (Rizvi; Section 3.1, paragraphs 1 and 2)".

[0006] The Applicants respectfully disagree and further submit that the Rizvi article does not disclose the inventive process of creating randomized transactions, as further clarified in the amended independent claims.

[0007] Per the Abstract, Rizvi investigates, with respect to mining rules, whether users can be encouraged to provide correct information by ensuring that the mining process cannot, with any reasonable degree of certainty, violate their privacy. Specifically, Rizvi discloses a "distortion procedure" that distorts a user's data before it is subject to a mining process in order to achieve privacy (see section 2.3). Privacy, as defined by Rizvi, is measured with regard to the "probability with which the user's distorted entries can be reconstructed" (i.e., "With what probability can a given 1 or 0 in the true matrix be reconstructed").

[0008] Section 3.1 describes the distortion procedure. This procedure serves a similar function as the process of "creating a randomized transaction" as in the present invention, but it is performed differently. Specifically, section 3.1 provides a computation related to a customer tuple X, where the tuple X is a fixed length sequence of 1's and 0's. The net effect of this computation is "that the identity of the *i*th element in X is kept the same with a probability *p* and is flipped with a probability (1-*p*)." All customer tuples are treated in the same manner. Although Rizvi assumes a single *p* being used for "all items," Rizvi states that the probability *p* for different items in the customer tuple may vary (see section 3.1). Thus, as disclosed, the distortion procedure of Rizvi is applied to all items in the customer tuple independently, and optionally the *p* used for different items may vary. In summary, Rizvi distorts a customer tuple by processing all items therein independently (i.e., not by selecting items randomly for processing). Furthermore, for each item in the customer tuple, Rizvi has two options: either (a)

keeping it with a predetermined probability *p* or (b) flipping it (i.e., replacing it with an opposite item) with a predetermined probability (1-*p*).

[0009] In other words, Rizvi discloses what was described in the present application as "uniform randomization", where "the client takes each item and with probability p replaces it with a new item not originally present in this transaction" (see paragraph [0039] of U.S. Patent Publication No. 2005/0021488). The present inventors, however, noted a problem with this "uniform randomization" technique – a fact acknowledged by Rizvi. That is, in the last paragraph of Section 3.1 Rizvi acknowledged that the present inventors in "Privacy Preserving Mining of Association Rules," Proc. Of 8th ACM SIGKDD Intl. Conf. on Knowledge Discovery and Data Mining (KDD), July 2002, referred to herein as "Privacy Preserving Mining of Association Rules" (July 2002)" (the published article upon which the present application was based) recognized a potential problem with the uniform randomization technique. Rizvi further indicates that this potential problem arises when the mining output is used to re-interrogate the distorted database and indicates that it warrants further investigation.

[0010] In light of potential problem(s) with "uniform randomization" like in Rizvi, the present invention provides a new non-uniform technique to better avoid privacy breaches (see paragraph [0041] of U.S. Patent Publication No. 2005/0021488). More particularly, independent claims 1, 7, 13, and 19 are amended herein to better clarify the inventive process used to create random transactions without using a uniform randomization technique. That is, as discussed in paragraph [0048] and further in paragraph [0073] of the published application (U.S. Application No. 2005/0021488), the invention randomizes transactions by randomly selecting items from an original data set, randomly dropping some of the true items that were randomly

selected and, then, randomly replacing some of the true items that were randomly dropped with false items. The Applicants submit that this non-uniform randomization technique is not disclosed by Rizvi. That is, the technique used in Rizvi does not randomly select items, randomly drop some of the items that were previously randomly selected (as claimed in the present invention) and, then, randomly replace some of the items that were previously randomly dropped with false items (also as claimed in the present invention).

[0011] Therefore, the Applicants submit that independent claims 1, 7, 13, and 19 are patentable over the cited prior art reference. Further, dependent claims 2-6, 8-12, 14-18 and 18-24 are similarly patentable, not only by virtue of their dependency from a patentable independent claim, but also by virtue of the additional features of the invention they define. Moreover, the Applicants note that all claims are properly supported in the specification and accompanying drawings, and no new matter is being added. In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejections.

III. Formal Matters and Conclusion

With respect to the rejections to the claims, the claims have been amended, above, to overcome these rejections. In view of the foregoing, Applicants submit that claims 1-24, all the claims presently pending in the application, are patentably distinct from the prior art of record and are in condition for allowance. Therefore, the Examiner is respectfully requested to reconsider and withdraw the rejections to the claims and further to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary. Please charge any deficiencies and credit any overpayments to Attorney's Deposit Account Number 09-0441.

Respectfully submitted,

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